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IS 8950 (1993): Inland vessels - Harbour tugs - General requirements [TED 18: Inland, Harbour Crafts and Fishing Vessels]



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भारतीय मानक

अन्तर्देशीय जलपोत — बंदरगाह टग — सामान्य अपेक्षाएं
(पहला पुनरीक्षण)

Indian Standard

INLAND VESSELS — HARBOUR TUGS —
GENERAL REQUIREMENTS

(First Revision)

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Inland and Harbour Craft Sectional Committee had been approved by the Transport Engineering Division Council.

This standard lays down the general requirements for Harbour tugs. The standard was first issued in 1978. The present revision of the standard has been taken up to align the standard with the current practice.

Harbour tugs and dock tugs are mainly intended for handling ships in harbour. Should these tugs be required to go out to sea for rescue operation they shall require to comply with the statutory requirements.

Considering operational requirements of these tugs it is intended to standardize the main aspects of such vessels for uniform acceptance by the owner as well as shipbuilder.

This standard has been prepared on the basis of data received from the individual ports in the country.

The tugs and its systems wherever applicable shall conform to latest rules of the Ministry of Transport, Government of India. Exemptions may be made from any requirements as admissible if specially required by the owner.

The diesel engines of power ratings, 2 165 kW and 2 910 kW are not manufactured in the country.

The following two standards are also available on tugs:

IS 7046 : 1993 Inland vessels — Harbour tugs — Guide for selection (*first revision*)

IS 7363 : 1993 Inland vessels — Harbour tugs — Tests and trials (*first revision*)

Indian Standard

INLAND VESSELS — HARBOUR TUGS — GENERAL REQUIREMENTS

(First Revision)

1 SCOPE

1.1 This standard covers general requirements of harbour and dock tugs with respect to their type, main design factors, structure, systems and equipment.

2 REFERENCES

2.1 The following Indian Standards are the necessary adjuncts to this standard.

<i>IS No.</i>	<i>Title</i>
1404 : 1989	Anti-corrosive paint, brushing for ships' bottom and hulls, red or chocolate (<i>second revision</i>)
1419 : 1989	Anti-fouling paints, brushing, for ship's bottoms and hulls (<i>second revision</i>)
3039 : 1988	Structural steel for construction of hulls of ships (<i>first revision</i>)
3268 : 1981	Stockless anchors (for ship's use) (<i>first revision</i>)
4374 : 1980	Mild steel fabricated vertical bollards with and without lugs (<i>first revision</i>)
4484 : 1975	Electrically welded stud link anchor chains and connecting shackles and swivels (<i>first revision</i>)
5200 : 1969	Bolt clippers
6948 : 1973	Ready mixed paint, undercoat, synthetic for ships
6951 : 1973	Ready mixed paint, finishing, exterior for ships
11294 (Part 1) : 1985	Side scuttles for inland vessels: Part 1 General requirements
11474 : 1985	General requirements of power operated windlasses and anchor capstans for inland vessels

3 REQUIREMENTS

3.1 The harbour and dock tugs shall be designed for 5, 10, 15, 22, 30 and 45 tonnes of the bollard pull.

3.2 The tugs shall be designed for pulling as well as pushing vessels. The tugs are to be constructed to fairlines with suitable deck camber and good sheer to withstand the rough weather conditions and adequate tumble home to prevent damage while going alongside deep sea vessels even during their severe rolling conditions.

3.2.1 The tugs shall preferably have round bilge and soft nose.

3.3 In addition to normal engine room (ER) control it is recommended that bridge control for operation of engine shall also be provided. As an alternative a two-way electrical telegraph may be provided.

3.4 The tugs shall have a flush deck having superstructure set in so that by the heeling of tug to any side, the superstructure shall not contact the wharf or adjacent ships. Suitable passage shall be left on either side of the superstructure on the deck for crew to move about.

3.5 Free Running Speed

The free running speed of the tugs at normal full power shall be as follows:

<i>Bollard Pull tonnes</i>	<i>Free Running Speed</i>
5	10
10	10
15	11
22	11
30	11
45	12

3.6 Initial Stability

The metacentric height in empty docking condition shall be a minimum of 0.40 m for all types of harbour and dock tugs.

3.7 Structure

The tugs shall be built of shipbuilding quality steel as per IS 3039 : 1988 and the scantlings shall conform to statutory body/classification society requirements

3.7.1 The construction shall be mainly welded. Riveting may be adopted in way of stringer angles and elsewhere if specifically asked by the owner.

3.7.2 The hull shall be specially strengthened in way of the towing posts, towing hook connections by means of deep beams and brackets or any alternative manner which may be approved by the statutory body. The bow shall be specially strengthened for pushing vessels into position.

3.8 Equipment

3.8.1 Anchors and Cables

The tugs shall be fitted with two approved stockless anchors of suitable size conforming to IS 3268 : 1981. Mild steel studlink cables shall conform to IS 4484 : 1975. The number of lengths of the cables shall be as per statutory requirements and/or classification society rules.

3.8.2 Hawse Pipes and Anchor Recess

Hull structure in way of hawse pipe and anchor pocket shall be stiffened as necessary and suitable chaffing

pieces shall be incorporated to protect hull and deck plating. Two hawse pipes are to be fitted as near to the fore and aft centre line as possible with adequate provision of housing to protect the anchors under all working conditions. Top of pipes are to be spigotted to take wearing pads and the bottoms are to be provided with heavy lips to be welded to outer shell. The length of the hawse pipes is to be such that when the anchor is heaved up the shanks are completely housed.

3.8.3 Naval Pipes (Spurling Pipes)

Mild steel naval pipes (spurling pipes) shall be fitted to load the cable in windlass and be carried through to extend below the level of the bottom of the beams of the respective lockers. The upper and lower ends shall be fitted with CI wearing pads of adequate radius.

3.8.4 Chain Locker

Chain lockers shall be of self stowing type and with efficient drainage and ventilation with false bottom, well clear of the ship bottom. The false bottom shall consist of adequate thick steel plates, and perforation for proper drainage. Chain lockers shall be divided into two compartments, each of adequate size to house the full length of chain on each side and to provide free space of not less than 600 mm height above the top surface of stowed chain and lower end of spurling pipe. Partition bulkhead shall be non-watertight and of adequate height to prevent fouling of chains in adjacent compartment. Free end of chains shall be secured to the stiffened area of the chain locker and with arrangement for quick release of chain.

3.9 Deck Fittings

3.9.1 Bollard, Fairleads, Mooring Pipes, Etc

The tugs shall be provided with bollards for taking side tows. Number and position of the bollards shall be indicated in the deck plan. The bollards shall be as per IS 4374 : 1980. Sufficient number of cleats of suitable diameter for suspending fenders, are to be fitted around the bulwark at places, where considered necessary. Provision and selection of cleats shall be as per IS 5200 : 1969. The mooring pipes of adequate strength and suitable size shall be fitted to steel bulwarks, stiffened by doublers or insert plates and fitted with 50 mm diameter round to prevent chaffing of ropes.

3.9.2 Bulwark, Guard Rails, Stanchions and Freeing Ports

The bulwark shall be as per statutory regulations. They will be supported by stays on the steel deck stringer and locally strengthened in way of all openings. Bulwark shall have adequate tumble home varying from about 30° at the bow and stern to about 5° at midships. The freeing ports shall be fitted into main deck bulwark as per regulations and shall be of adequate size and number to prevent water collecting on the decks under the worst conditions. The hinge pins shall be of brass, if flaps are fitted. The railings are to be fitted wherever required around the decks but elsewhere than where bulwark is fitted.

3.9.2.1 All openings of the bulwark in way of mooring pipes, panama leads, scuppers, gangways, etc, as well

as all openings on decks shall be suitably strengthened all around.

3.9.3 Gangway Openings

Hinged doors secured with heavy horizontal bolts shall be fitted amidships in the bulwark on each side of the tug.

3.10 Hull Fittings

3.10.1 Copebars

Fendering shall be done with 75 mm diameter half round mild steel bars welded horizontally to sheer strake at the main deck level and further parallel to it at distances of 450 mm below. Hull plating shall be protected by welding these half round bars diagonally at 450 mm pitch between these lines of horizontal fendering extending over 2.5 metres fore and aft of amidship. Similar chaffing bars in way of the hawse pipes shall be provided.

3.10.1.1 A duty strengthened wide flat nose will be provided at the bow above the main deck level to house rubber fendering. This shall be suitably secured vertically or horizontally.

3.10.2 Side Scuttles (Port Holes)

The side scuttles (port holes) shall be as per IS 11294 (Part 1) : 1985.

3.10.3 Funnel

The funnel shall be fitted with spark arresters.

3.11 Towing Equipment

3.11.1 Towing Hook

Provision shall be made for approved type spring loaded, self-releasing towing hooks. At least three rows of towing beams for tugs with bollard pulls of 15 and 22 tonnes and suitably for others with teak wood capping shall be provided over the after deck duly supported on stanchions.

3.11.2 Capstan

Electric/hydraulic capstan of suitable size shall be fitted and the winch shall be capable of exerting a pull on mooring ropes of not less than 3 tonnes, heaving stack at a speed of 20 m/min.

3.11.3 A suitable electric/hydraulic windlass in case of tugs having bollard pull of 15 tonnes and above, and a hand windlass in case of tugs having bollard pull of 10 tonnes and below, shall be provided. Choice regarding powered or hand driven windlass shall be left to the owner.

3.11.4 The capstan and windlass shall conform to the requirements stipulated in IS 11474 : 1985.

3.12 Manoeuvring Equipment

The steering system shall be hydraulic/electro-hydraulic type.

3.12.1 Rudders

Rudders shall be of double plated welded construction. In case of twin screw tugs, twin rudders type shall be provided. The rudder section shall be streamlined with drain and air escape holes, so that internal cavities can

be filled with an approved compound. Rudder stock modulus shall not be less than that required by the classification society.

3.12.2 Shrouded (Nozzle) Propeller and Bow Thrusters

If required by the owner provision of these items may be made.

3.13 Accommodation

3.13.1 Accommodation shall be arranged to suit staff requirements of the concerned port and in accordance with the statutory requirements.

3.13.2 One or two galleys on main deck shall be provided according to practice prevailing in the port. Ample storage space to cater cooked food is to be provided. Each pantry shall be equipped with hot plate, oven and refrigerator.

3.14 Ventilation System

An overall mechanical ventilation system shall be provided. Apart from this, the ship shall have natural ventilation system with supply cowl and exhaust mushroom vents, carefully dispensed so as not to allow any hot pockets to remain in any part of the vessel. Fans are also to be provided in addition to blowers in the accommodation. Engine room shall have two blowers.

3.15 Sanitary System

3.15.1 Sanitary system comprising of water closets, wash basins and shower cubicles, for officers, petty officers and crew shall be provided as per statutory rules.

3.15.2 Sanitary system shall be independent of fresh water system through identical in function. Each system shall work normally in an efficient pressure system.

3.16 Painting

Only good quality marine paints shall be used. Paints conforming to IS 1404 : 1989, IS 1419 : 1989, IS 6948 : 1973 and IS 6951 : 1973 are recommended for use. All steel surfaces are to be wire-brushed to remove rust, oil, dirt, etc, and made dry before painting. In general, the painting schedule is to be as follows:

- a) All steel work after cleaning shall be given two coats of red lead or equivalent approved primer.
- b) Inside hull spaces shall be given one coat of superior quality paint.
- c) Outer hull shall be given one coat of anti-corrosive followed by one coat of anti-fouling paint.
- d) One coat of boot-topping from water line to main deck level shall be given.
- e) Cabins shall be painted with synthetic

enamel over the previous paint inside and upper structure to be painted with two coats of paint of approved colour.

- f) Funnel shall be painted with heat resisting paint.

3.17 Tanks

3.17.1 Fresh Water Tanks, Oil Fuel Tanks, Lubricating Oil Tanks

All tanks and similar spaces are to be provided with necessary fittings and requisite number of wash plates to reduce the free surface to a minimum.

3.18 Navigation Equipment

The navigation equipment shall comprise of complete set of electric lights and a spare set of oil lights approved by statutory authority. Sturdy clocks in wheel house and engine room, which can withstand vibrations, telephone communications between wheel house and engine room, foghorn, bell, air whistle, double way telegraphs, search lights, steering compass rudder indicator, revolution indicator of propeller shaft on the bridge and in the engine room shall be provided.

3.18.1 Items such as transistorized loud hailer, radar set, radio equipment (transmitter and receiver) of V.H.F., echo sounder at required frequencies may be supplied as per the requirement of owner.

3.19 Pumping Out System

The bilge pipe systems (sizes as per regulation) for every compartment shall be served by two pumps, one of which may be an engine driven pump. Deckwash pipes and fire hydrant points shall be provided as per statutory rules.

3.20 Life Saving Appliances

A provision of life saving appliances shall be made in accordance with the statutory requirements.

3.21 Fire Fighting System

3.21.1 Provision of fire fighting equipment shall be in accordance with the latest statutory rules. Extra provision for fire fighting and salvage and rescue operation for tugs with bollard pull of 15 and 22 tonnes shall be made if required by the owners.

3.21.2 The engine room shall be fitted with an emergency exit. The crew accommodation dormitory shall have an escape with ladder through a watertight hatch opening from below into the boat deck. Ship crew accommodation ventilation shall be designed to enable its being sealed in the event of a fire inside it.

3.22 Electrical Equipment

Provision of an electrical equipment shall be made with respect to a supply of 415 V and 50 Hz.

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